

1 ABSTRACT OF THE DISCLOSURE

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3 ASICs or like fabrication-preprogrammed hardware provide

4 controlled power and recovery signals to a computing system

5 that is made up of commercial, off-the-shelf components — and

6 that has its own conventional hardware and software fault-pro-

7 tection systems, but these are vulnerable to failure due to

8 external and internal events, bugs, human malice and operator

9 error. The computing system preferably includes processors

10 and programming that are diverse in design and source. The

11 hardware infrastructure uses triple modular redundancy to test

12 itself as well as the computing system, and to remove failed

13 elements — powering up and loading data into spares. The

14 hardware is very simplified in design and programs, so that

15 bugs can be thoroughly rooted out. Communications between the

16 protected system and the hardware are protected by very simple

17 circuits with duplex redundancy.